



NOAA Central Library

National Oceanic and Atmospheric Administration

Bibliometrics at the NOAA Central Library

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May 23, 2017

Bibliometrics at the NOAA Central Library



Webinar Agenda

- Bibliometrics 101
- Types of metrics
- Process & Tools
- Tracking NOAA Publications
- Other Projects
- Resources

Bibliometrics 101



WHAT IT IS...

The scientific and quantitative analysis of academic research; a way of measuring the authorship, publication and use of literature as a proxy for research

BIBLIOMETRICS IN THE LIBRARY...

- Evaluate the output of authors, programs, institutions and countries
- Study areas of scientific research and identify trends
- Assist with library tasks such as evaluating journal titles for collection development
- Aid authors in selecting journals for publication and identifying seminal research in their field



BASIC PRINCIPLES

- **Bibliometric indicators depend entirely on data quality**
 - In publication collection, proper author and institution disambiguation is crucial to retrieving high quality results.
 - In database selection differences in coverage, search capabilities, associated tools and indexing quality should be given careful consideration.
- **Most bibliometric datasets have skewed distributions**
 - The average is not representative of the dataset and this needs to be accounted for. Providing median as well as mean figures will resolve this to some extent.
- **Citation counts and behaviors vary from field to field and over time**
 - Most metrics cannot be compared between fields.
 - Publications should be at least two years old in order to provide meaningful citation data.
- **Context is Key!**
 - No indicator is perfect and each measures something different so use multiple indicators to give the most complete picture possible.

LIMITATIONS AND CONSIDERATIONS

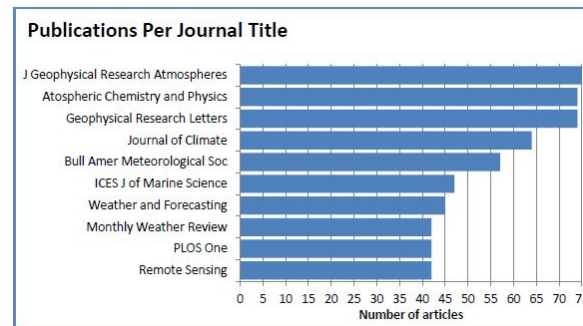
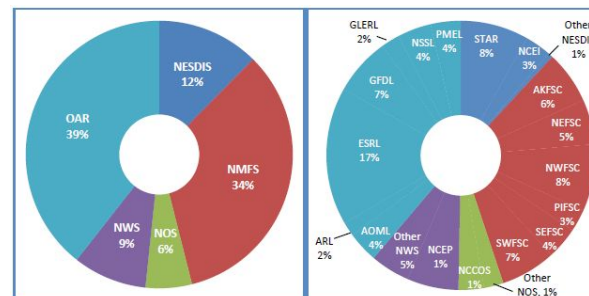
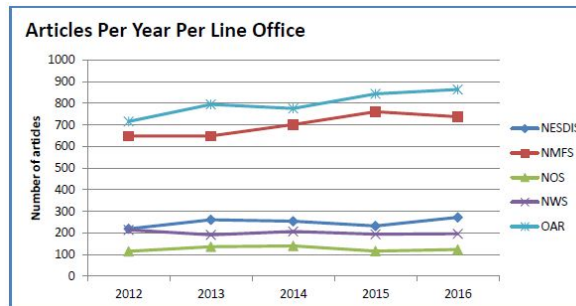
- **Bibliometric indicators are imperfect and can only be used for their specific purpose.**
 - For example: Journal Impact Numbers can only be used to evaluate journals and not the papers in those journals.
- **There's no way to definitively know what indicators actually measure.**
 - For instance, high citation rates don't necessarily correlate to credibility and an article may be highly cited because the research it presents is being questioned.
- **Bibliometric analysis only takes into account publications and not other factors.**
 - These metrics cannot, for example, replace peer review and should not be used as a sole method of evaluation.
- **Many indicators can be gamed.**
 - Journal Impact scores can be manipulated by editors and H-Index can be manipulated through self-citation; take care when relying on certain metrics.
- **Prevent misuse of metrics.**
 - Clearly labeling and captioning visualizations decreases likelihood of misuse or manipulation.
 - Be clear with audience about appropriate uses and limitations of bibliometric indicators.

Types of Metrics



Publication Metrics

- Publication Count
- Publications per:
 - Year or quarter
 - Office or division
 - Journal title
 - Subject area
 - Author
 - Funding Agency
 - Type of publication



Types of Metrics



Citation Metrics

- Citation Rate
- Citations Per Year
- Mean Citation Rate
- Median Citation Rate
- H-Index

NOTE: Articles require at least 2 years to accumulate enough citations for article-level bibliometric indicators to be reliable.

Citation metrics from WoS

Results found: 1438

Sum of the Times Cited [?]: 83319

Sum of Times Cited without self-citations [?]: 79578

Citing Articles [?]: 54487

Citing Articles without self-citations [?]: 53459

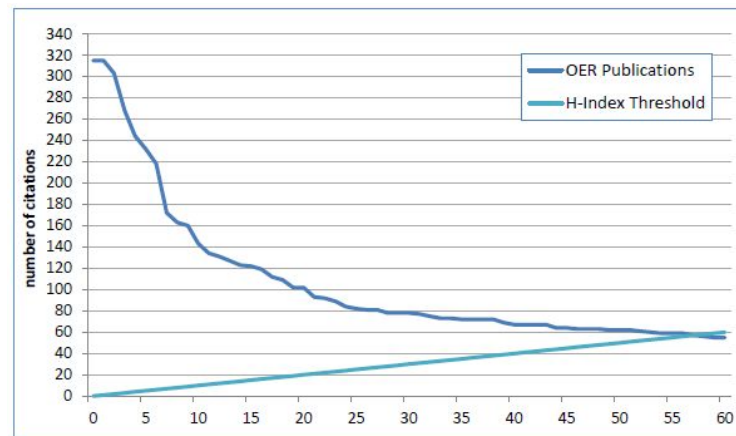
Average Citations per Item [?]: 57.94

h-index [?]: 118

H-Index

“A scientist has index h if h of his/her N_p papers have at least h citations each, and the other $(N_p - h)$ papers have no more than h citations each.”

Hirsch, J.E. (2005) An index to quantify an individual's scientific research output. Proc Natl Acad Sci USA, 102(46), 16569-16572. doi:[10.1073/pnas.0507655102](https://doi.org/10.1073/pnas.0507655102)

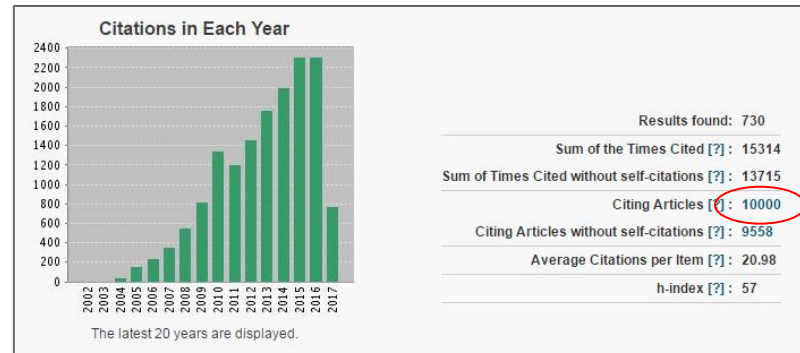


Types of Metrics

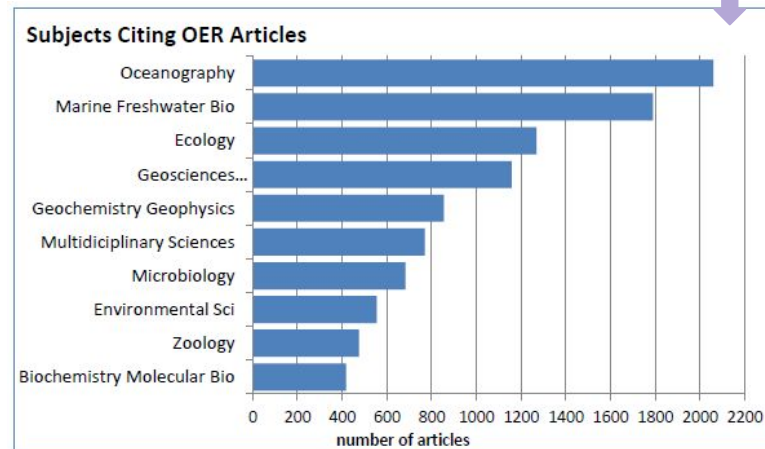


Analysis of Citing Articles

- Simply publication metrics calculated for the articles that cited our articles.
- Provides a picture of how NOAA research is being used by the greater scientific community.
- Metrics include:
 - Citing articles per subject and journal
 - Institutions and funding agencies
 - International publications



Clicking on the Citing Article in the WoS Citation Report creates a new set of articles that can be analyzed.



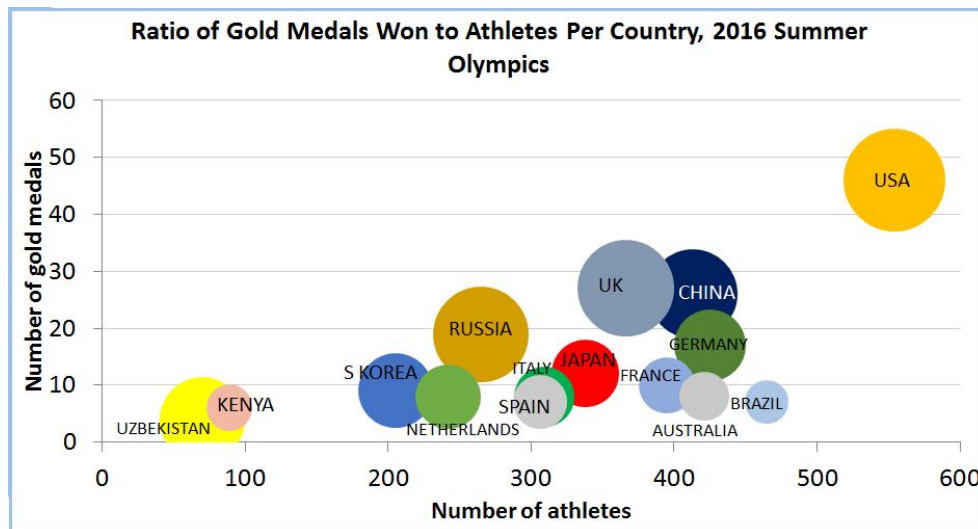
Types of Metrics



Percentile Ranks

Calculating percentile ranks based on distribution of citation counts to all papers in a given set, normalizes citations and thus can give better comparisons across disciplines

- Can be used for evaluation, comparison, and ranking.
- Tools such as Essential Science Indicators can help to calculate percentile ranks.
- Percentage of articles in top 1% or 10% of all articles in a given field help illustrate high quality of research.

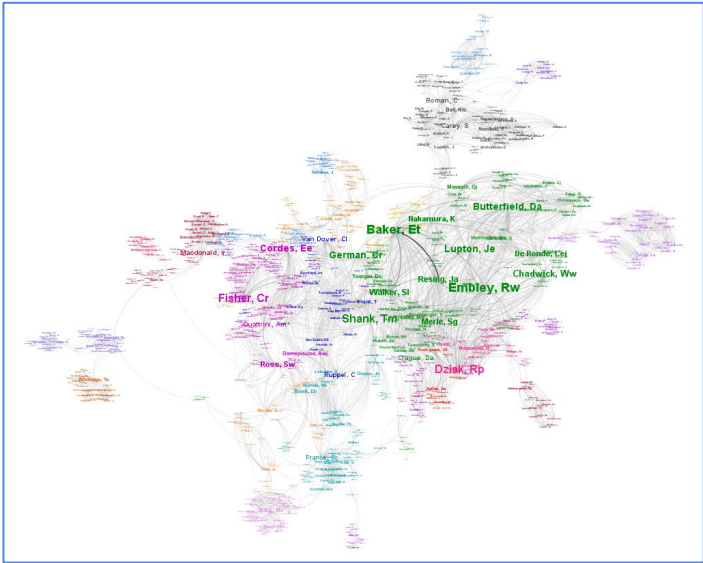
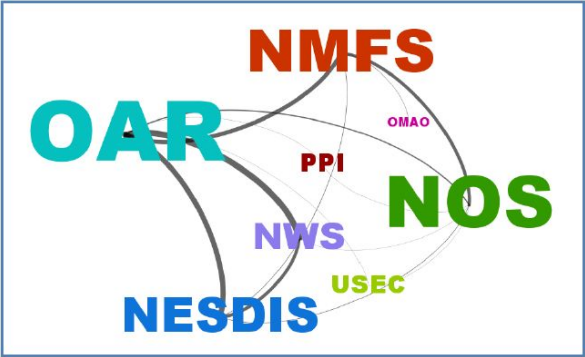
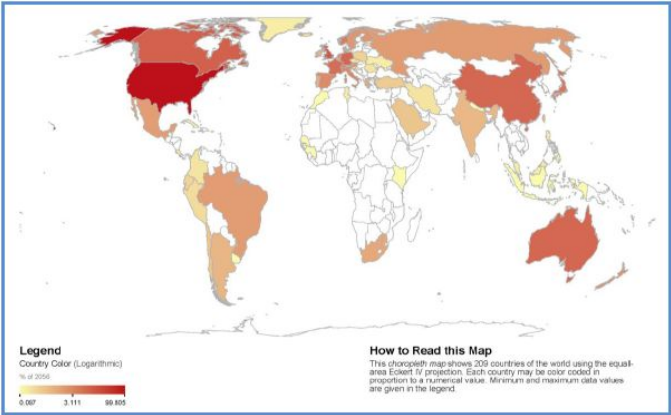


Types of Metrics

Collaboration Rates and Networks

Shows collaborations between authors, institutions, countries, etc.

COLLABORATION	
Type of Collaboration	Rate
Intramural collaboration at the line office level	5.76 %
Intramural collaboration at the research unit level	12.49 %
Extramural collaboration at the institutional level	94.02 %
Extramural collaboration at the international level	44.02 %

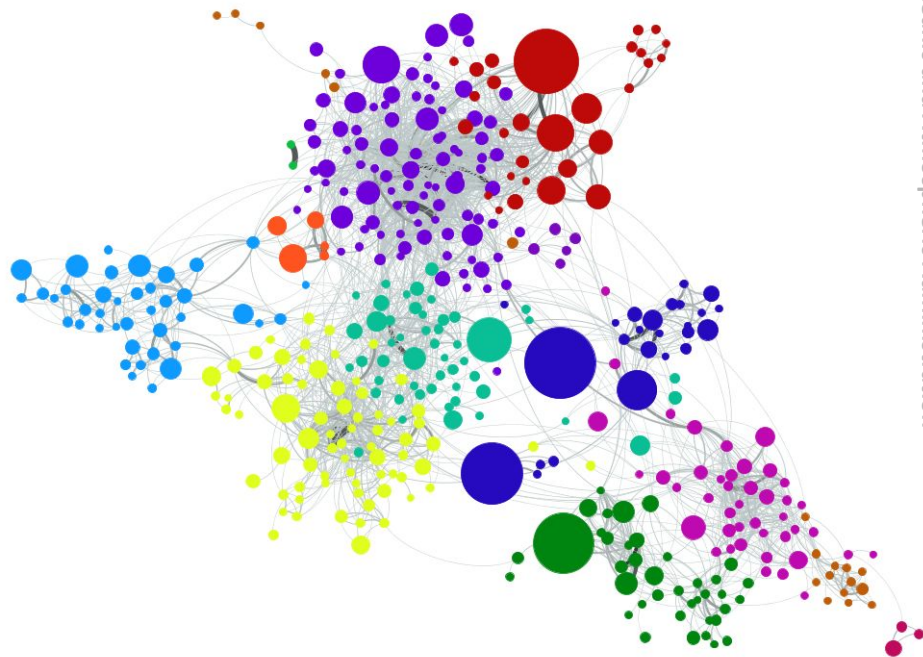


Types of Metrics



Citation Networks

- Networks illustrating relationships between publications cited by articles in a set.
- Three types of citation networks:
 - Direct - edges connect articles that cite each other.
 - Bibliographic coupling - edges connect articles that cite the same publications.
 - Co-citation - edges connect articles cited by the same publications.
- Nodes always represent publications but edges represent different relationships in each case.



TYPES OF METRICS



Journal Level Metrics

- Seek to illustrate relative importance of a journal within its field.
- Basic indicators include:
 - **Journal Impact Factor (JIF)**
 - **Eigenfactor**
 - Scimago Journal & Country Rank (SJR)
 - Cited Half-Life
 - CiteScore (Scopus)
- Not appropriate for evaluating articles or researchers.

Formula for JIF

$J.I.F. 2012 = \frac{\text{Citations Received in 2012 to Items Published in 2010 or 2011}}{\text{Citable Items in 2010 and 2011}}$

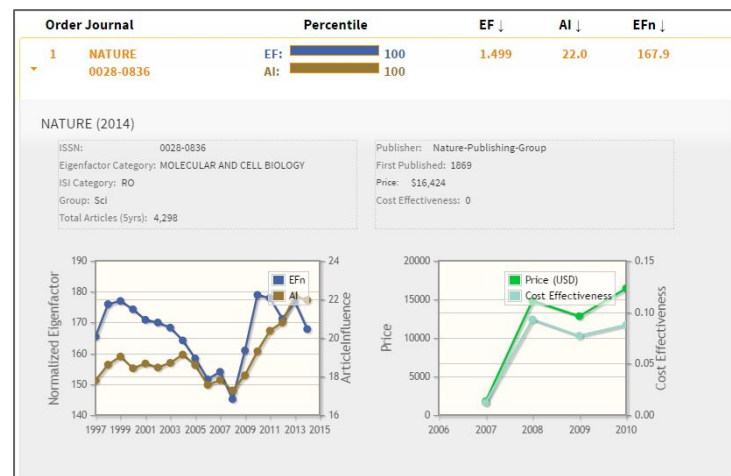
Citable Items in 2010 and 2011

InCites Journal Citation Report

	Full Journal Title	Total Cites	Journal Impact Factor	Eigenfactor Score
9	NATURE	627,846	38.138	1.44256

Cited Half-Life Data					
Cited Year	2015	2014	2013	2012	2011
#Cites from 2015	8,538	31,056	34,618	42,643	36,247
Cumulative %	1.36	6.31	11.82	18.61	24.39

Eigenfactor Journal Ranking



Types of Metrics



Author Metrics In ResearcherID

Authors who have ResearcherIDs have access to basic citation metrics as well as ResearcherID labs and can use these tools to calculate their own metrics.

Meyers, Tilden[Return to Search Page](#)[Get A Badge](#)[ResearcherID Labs](#)

ResearcherID: C-6633-2016

Other Names: T. P. Meyers; T. Meyers

URL: <http://www.researcherid.com/rid/C-6633-2016>

My Institutions (more details)

Primary Institution: NOAA/ATDD

Sub-org/Dept:

Role: Researcher (Non-Academic)

My Publications

My Publications (132)

[View Publications](#)

[Citation Metrics](#)

ResearcherID labs

[Create A Badge](#)

[Collaboration Network](#)

[Citing Articles Network](#)

My Publications: View

This list contains papers that I have authored.

132 publication(s)

1. Title: Comparison of four EVI-based models for estimating gross primary production
Author(s): Dong, Jinwei; Xiao, Xiangming; Wagle, Pradeep; et al.
Source: Remote Sensing of Environment Volume: 162 Pages: 154-168 Published: FEB 10
Times Cited: 17
DOI: 10.1016/j.rse.2015.02.022

2. Title: Comparison of in-situ, aircraft, and satellite land surface temperature measurements
Author(s): Krishnan, Praveena; Kochendorfer, John; Dumas, Edward J.; et al.
Source: Remote Sensing of Environment Volume: 165 Pages: 249-264 Published: FEB 10
Times Cited: 5
DOI: 10.1016/j.rse.2015.05.011

3. Title: Improved global simulations of gross primary product based on a new data assimilation system
Author(s): Yan, Hao; Wang, Shao-qiang; Billiesbach, Dave; et al.
Source: Ecological Modelling Volume: 297 Pages: 42-59 Published: FEB 10
Times Cited: 6
DOI: 10.1016/j.ecolmodel.2014.11.002

My Publications: Citation Metrics

This graph shows the number of times the articles on the publication list have been cited in each of the last 20 years.
Note: Only articles from Web of Science Core Collection with citation data are included in the calculations. More information about these data.

Citation Distribution by year

Year	Citations
1997	100
1998	150
1999	200
2000	250
2001	300
2002	350
2003	400
2004	450
2005	500
2006	550
2007	600
2008	650
2009	700
2010	750
2011	800
2012	850
2013	900
2014	950
2015	1000
2016	1100
2017	450

Total Articles in Publication List: 132

Articles With Citation Data: 132

Sum of the Times Cited: 14281

Average Citations per Article: 108.19

h-index: 57


Last Updated: 05/19/2017 20:04 GMT

Types of Metrics



Author Metrics In Google Scholar

Google Scholar is difficult to use when analyzing the output of an office or program but does provide some useful, albeit noisy, metrics for author level analysis and can provide insight into wider use of research in both peer-reviewed and non-peer-reviewed sources.



Tilden P Meyers
NOAA
climate, water and carbon budgets
Verified email at noaa.gov

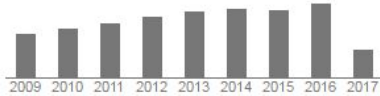
[Follow](#)

Title	1–20	Cited by	Year
FLUXNET: A new tool to study the temporal and spatial variability of ecosystem-scale carbon dioxide, water vapor, and energy flux densities D Baldocchi, E Falge, L Gu, R Olson, D Hollinger, S Running, P Anthony, ... Bulletin of the American Meteorological Society 82 (11), 2415-2434	2388	2001	
Energy balance closure at FLUXNET sites K Wilson, A Goldstein, E Falge, M Aubinet, D Baldocchi, P Berbigier, ... Agricultural and Forest Meteorology 113 (1), 223-243	1572	2002	
On the separation of net ecosystem exchange into assimilation and ecosystem respiration: review and improved algorithm M Reichstein, E Falge, D Baldocchi, D Papale, M Aubinet, P Berbigier, ... Global Change Biology 11 (9), 1424-1439	1415	2005	

Google Scholar

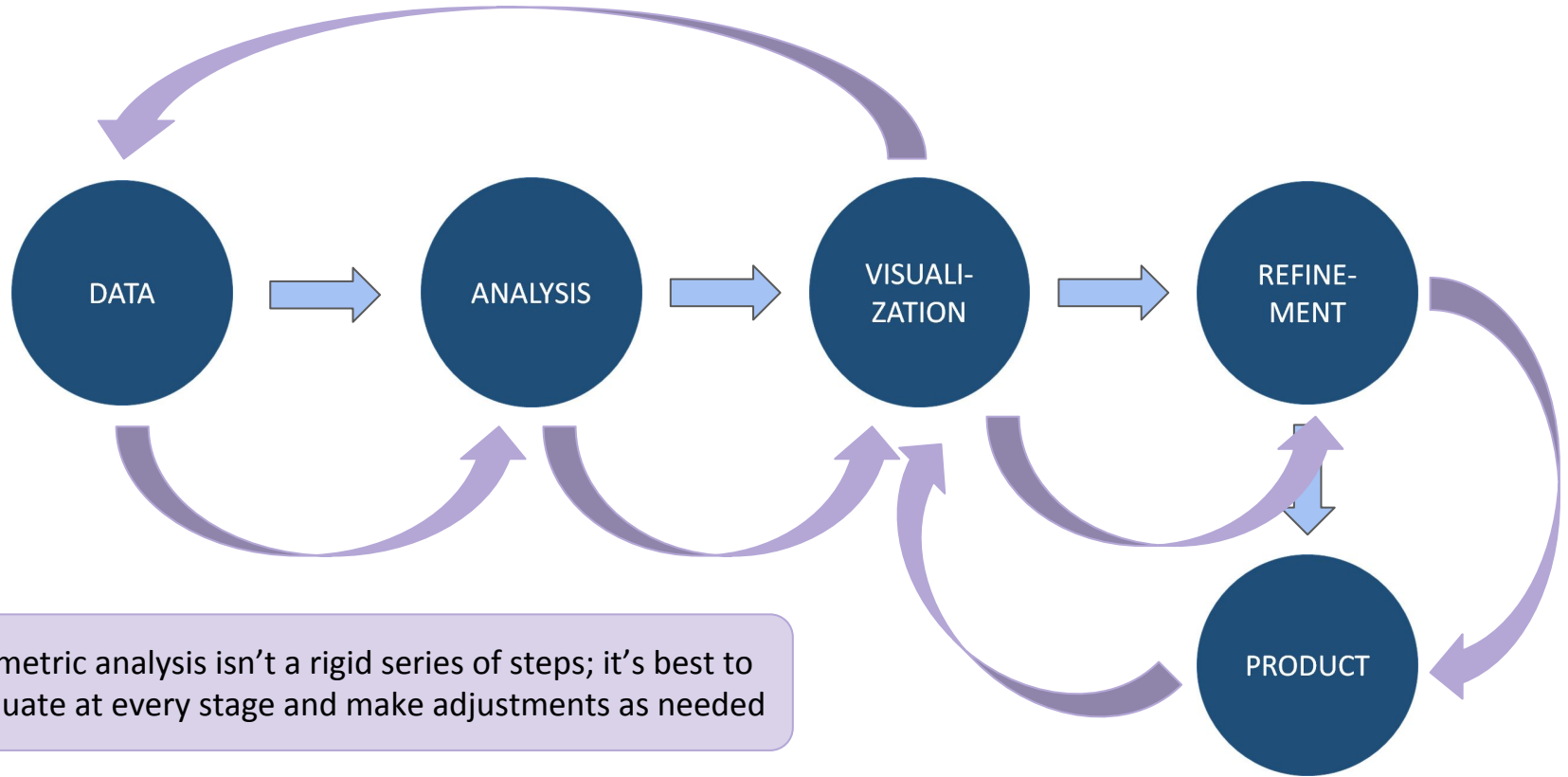
[Get my own profile](#)

Citation indices	All	Since 2012
Citations	22275	9949
h-index	67	47
i10-index	122	92



Year	Citations
2009	~1000
2010	~1200
2011	~1400
2012	~1600
2013	~1800
2014	~2000
2015	~2200
2016	~2400
2017	~1000

The Process

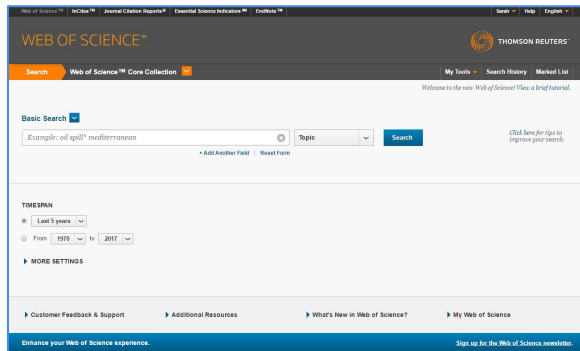


Tools For Bibliometrics



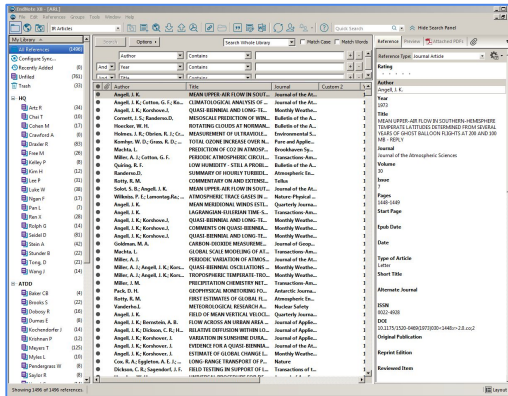
Our Basic Bibliometric Toolbox

For Data Collection and Management



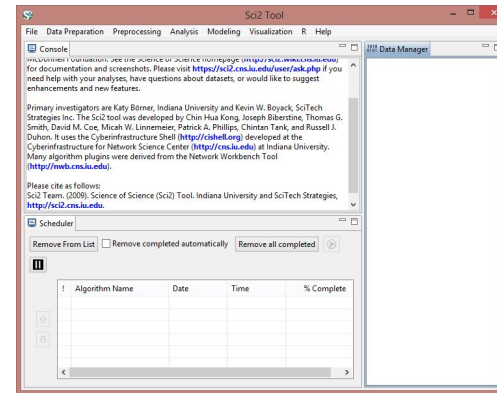
Web of Science

EndNote

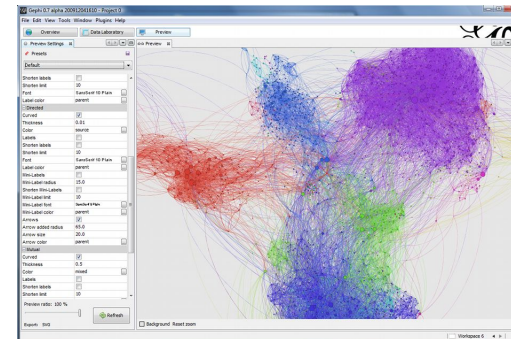


For Data Analysis and Visualization

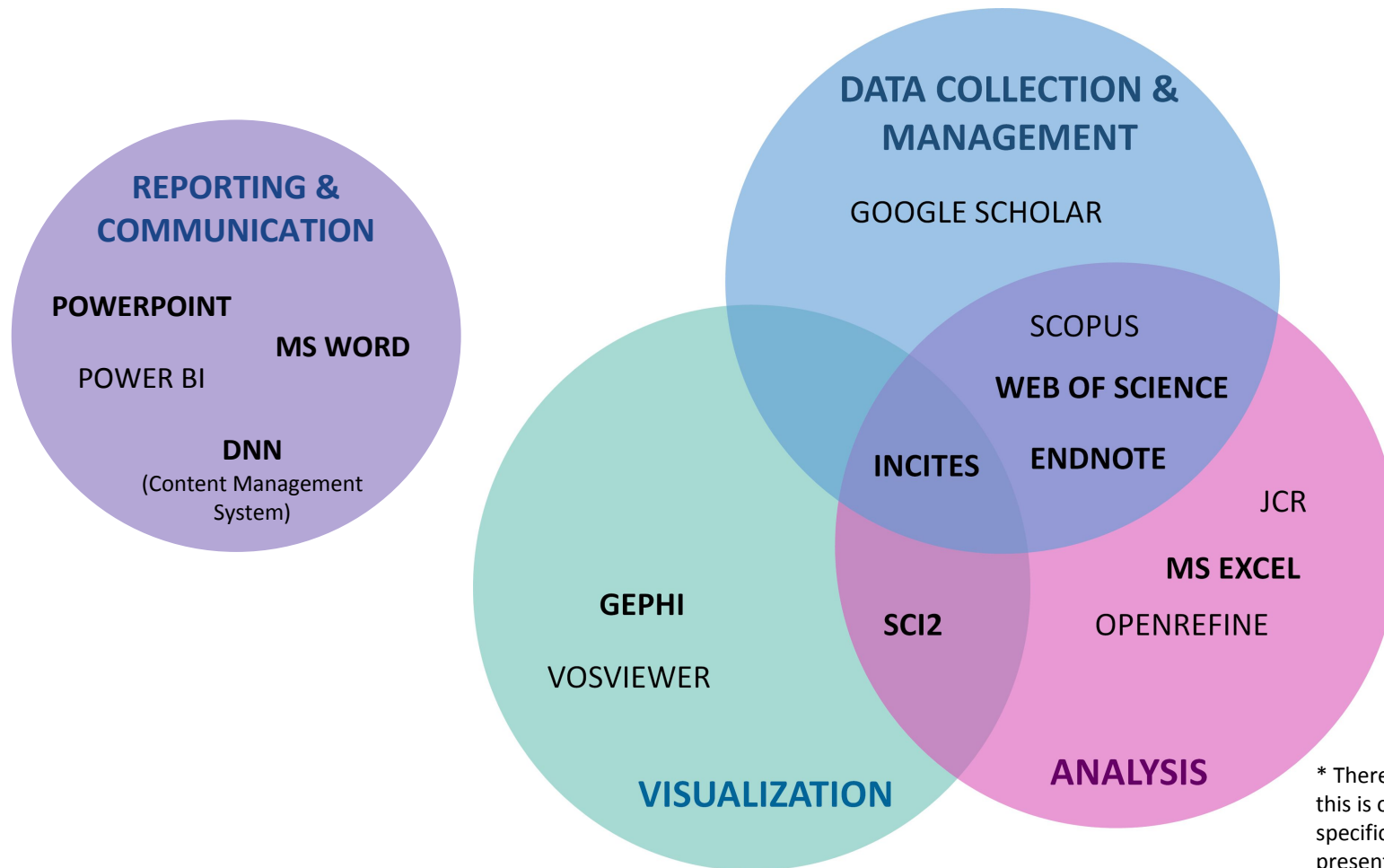
Science of Science Tool (Sci2)



Gephi



Tools For Bibliometrics



* There are many tools available, this is only a selection. Tools specifically discussed in this presentation are in bold text.

NOAA-Wide Publications Tracking



The NOAA-Wide Publications Tracking seeks to report the number of peer-reviewed articles produced by NOAA authors in a consistent and reproducible manner.

- Started in 2012, and added funded articles in 2016
- More than 10,000 NOAA-authored articles collected to date
- Metrics produced are reported quarterly and are used in the balanced scorecard which monitors NOAA's performance.

Our Team

Sarah Davis
Jamie Roberts
Jan Thomas (College Park)
Ashley Jefferson (Miami)

NOAA-Wide Publications Tracking



DATA COLLECTION

- Weekly report run in Web of Science using saved search string.
- New results saved to EndNote online for review by the bibliometrics team.

Web of Science™ | InCites™ | Journal Citation Reports® | Essential Science Indicators™ | EndNote™ | Search | Help | English

WEB OF SCIENCE™ THOMSON REUTERS™

Search My Tools Search History Marked List

Results: 265 (from Web of Science Core Collection)

You searched for: AD=(noaa OR (n at* ocean* atmos* adm*)) OR AD=((n mfs OR (nat* mar* fish* ser*)) OR (noa a fisheries)) OR (of* hab* cons*) OR (of* pro* reso*) OR AD=(afsc OR (at* fish* sci* c*)) OR (nat* mar* man* lab*) OR AD=(mfsc OR (nw fish* sci* c*)) OR AD=(svfsc OR (sw fish* sci* c*)) OR AD=(pfsc OR (pac* sa* fish* sci* c*)) OR AD=(mfsc OR (ne fish* sci* c*)) OR AD=(of* hab* cons*) OR (of* p ro* reso*) OR (of* sus* fish*) OR (sea* ins* lab*) OR AD=(OAR OR (ocean* atm* res*)) OR AD=(at* res* lab*) OR (sp* op* res* div*) OR (field res* div*) OR (atmos* sci* mod* div*) OR (atmo s* tub* diff* div*) OR (NOAA-ATDD). OR AD=(ADML OR (at* ocean* met* l ab*) OR (hsa* res* div*)) OR AD=(ea* sci* res* lab*) OR (ea* res* sea* lab*) OR AD=(geoph* ft* dy* lab*) OR (gfd) OR AD=(glri OR (gr* la* env* res* lab*)) OR AD=(nsa OR (nat* se v* at* lab*)) OR AD=(emel OR (pac* mar* em* lab*)) OR AD=(nat* oc* ser*) OR NOS OR (of* co* sur*) OR (eco* sur* dev*) OR (n* geod* sur*) OR (c* op* ocean* pro* s*) OR COOPS OR (CO ORS) OR (n* mar* sanc*) OR O NMS OR (of* resp* nest*) OR (coa* c* tr) OR (oc* coast* res* n*) OR (na t* c* coast* ocean sci*) OR NCOS O R (c* coast* fish* hab* res*) OR (c* co ast* mon* ass*) OR (c* coast* env* h* biom* res*) OR (CCEHR) OR AD=(IN at* Env* Sat* Dat* & Int* S*) OR NES DIS) OR AD=(N* Gr* Da* C*) OR NC DC OR (Paleolim* Branch) OR AD=(STAR SAME MD) OR (Cr Sat* App* Res*) OR (Sat* Mar* and Cim* Div*) OR AD=(UCSDA OR (Up* Cr Sat* Da * Ass*)) OR AD=(Coastwatch) OR (c oast watch) OR (Coral Reef Watch)) O R AD=(Nat* Geo* Data Qn) OR NSO C) OR AD=(nat* Ocea* data ctn) OR N ODC OR (oce* clim* lab*) OR (Nat* C oas* Data Dev* ctn) OR NCDD) OR AD=(OP Sys* Dev*) OR AD=(Of* Sat* Op*) OR AD=(OP* Sat* Da*) OR OSD PD) OR AD=(Sat* prop*) OR (Sa* Op * En* Sa*) OR (sat* Ser* Dr*) OR SSD OR (GOES R) OR AD=(mw OR (nat* west* s*)) OR AD=(OP* Hy* Dev*) OR OHD OR (Of* Wa* Wa*) OR OCW

Sort by: Recently Added Page 1 of 27

Select Page Save to EndNote online Add to Marked List Analyze Results Create Citation Report

- Ambient PM2.5 in the residential area near industrial complexes: Spatiotemporal variation, source apportionment, and health impact**
By: Hsu, Chin-Yu; Chang, Hung-Chie; Chen, Mu-Jean; et al
SCIENCE OF THE TOTAL ENVIRONMENT Volume: 590 Pages: 204-214 Published: JUL 15 2017
Full Text from Publisher View Abstract
- Chemical characteristics, deposition fluxes and source apportionment of precipitation components in the Jiaozhou Bay, North China**
By: Xing, Jianwei; Song, Jiming; Yuan, Huamao; et al
ATMOSPHERIC RESEARCH Volume: 190 Pages: 10-20 Published: JUL 1 2017
Full Text from Publisher View Abstract
- Evaluation of Antarctic snowfall in global meteorological reanalyses**
By: Palerm, Cyril; Claud, Chantal; Dufour, Ambrose; et al
ATMOSPHERIC RESEARCH Volume: 190 Pages: 104-112 Published: JUL 1 2017
Full Text from Publisher View Abstract
- Migration of green mirid, *Cerotropus dilutus* (Stål) and residence of potato bug, *Clorotomus norwegicus* (Gmelin) in Tasmania (Hemiptera: Miridae: Mirinae: Mirini)**
By: Hill, Lionel
CROP PROTECTION Volume: 96 Pages: 211-220 Published: JUN 2017
Full Text from Publisher View Abstract
- Cigarette smoking is associated with adverse survival among women with ovarian cancer: Results from a pooled analysis of 19 studies**
By: Praestegard, Camilla; Jensen, Allan; Jensen, Signe M.; et al
Group Authors: Australian Ovarian Cancer Study Grp; Ovarian Cancer Consortium
INTERNATIONAL JOURNAL OF CANCER Volume: 140 Issue: 11 Pages: 2422-2435 Published: JUN 1 2017
Full Text from Publisher View Abstract
- Hydrothermal plume mapping as a prospecting tool for seafloor sulfide deposits: a case study at the Zouyu-1 and Zouyu-2 hydrothermal fields in the southern Mid-Atlantic Ridge**
By: Tao, Chunhui; Chen, Sheng; Baker, Edward T.; et al
MARINE GEOPHYSICAL RESEARCH Volume: 38 Issue: 1-2 Special Issue: SI Pages: 3-16 Published: JUN 2017
Full Text from Publisher View Abstract

Times Cited: 0 (from Web of Science Core Collection)
Usage Count

NOAA-Wide Publications Tracking



DATA REVIEW

- Bibliometrics team reviews records in EndNote online and adds project specific metadata.
- Edited records are saved to EndNote desktop and given a final quality control review.
- Periodically, further review in an effort to “clean up” data.

The screenshot displays the EndNote desktop application. The main window shows a list of references under the 'My References' tab. The list includes columns for Author, Title, Journal, Year, and DOI. A detailed view of a specific reference is shown on the right, titled 'View Reference in "NOAA Wide - Jamie"'. The reference details include the author 'Adams, C. F.', the title 'Age-specific differences in the seasonal spatial distribution of butterflyfish (Parrotfish trachurus)', and the journal 'Marine Science'. The interface also shows a search bar at the top and a sidebar with various tools and options.

NOAA-Wide Publications Tracking

DATA REVIEW: METADATA EDITING

- EndNote custom fields are used to add project-specific metadata including

- Fiscal Year
- Line Office
- Lab/Office/Division
- Grant Number (if available)
- NOAA's Involvement
- Certain Grant Programs

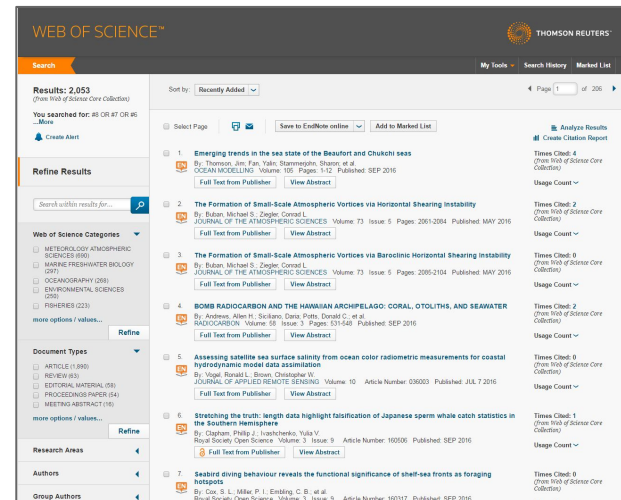
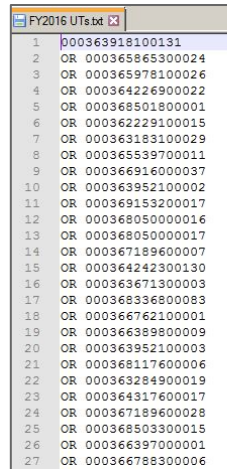
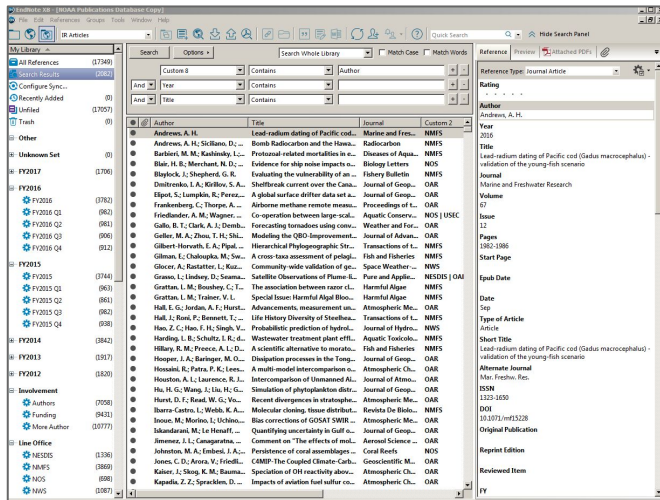
FY
FY2017 Q1
Custom 2
NMFS NOS
Custom 3
NWFSC OCM
Custom 4
CBD SD
Custom 5
Custom 6
Custom 7
NA07OAR4170008
Custom 8
AUTHOR FUNDING
Accession Number
WOS:000389089300027
Call Number
Label
SEA GRANT
Keywords

NOAA-Wide Publications Tracking



DATA ANALYSIS & VISUALIZATION

Most analyses start with creating a dataset within our EndNote database, exporting a list of accession numbers, and then running a search for those numbers in Web of Science. From there the **Analyze Results** and **Create Citation Report** functions offer a number of tools for creating metrics.



NOAA-Wide Publications Tracking

DATA ANALYSIS & VISUALIZATION

Using the analysis tools in Web of Science we can create basic publication and citation metrics which can easily be visualized using Excel.

Results Analysis

<<Back to previous page

2,053 records. Emerging trends in the sea state of the Beaufort and Chukchi seas.

Rank the records by this field:

Set display options:

Sort by:

Group Authors

Languages

Organizations

Organizations-Enhanced

Show the top 10 Results.

Minimum record count (threshold): 2

Record count

Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

View Records

Exclude Records

Field: Organizations-Enhanced	Record Count	% of 2053	Bar Chart
NATIONAL OCEANIC ATMOSPHERIC ADMIN NOAA USA	1971	96.006 %	
UNIVERSITY OF COLORADO BOULDER	315	15.343 %	
UNIVERSITY OF COLORADO SYSTEM	315	15.343 %	
NATIONAL AERONAUTICS SPACE ADMINISTRATION NASA	263	12.811 %	
UNIVERSITY OF CALIFORNIA SYSTEM	254	12.372 %	
UNIVERSITY OF WASHINGTON	165	8.037 %	
UNIVERSITY OF WASHINGTON SEATTLE	164	7.988 %	
UNIVERSITY SYSTEM OF MARYLAND	136	6.624 %	
NATIONAL CENTER ATMOSPHERIC RESEARCH NCAR USA	123	5.991 %	
GODDARD SPACE FLIGHT CENTER	114	5.553 %	

View Records

Exclude Records

Field: Organizations-Enhanced

Record Count

% of 2053

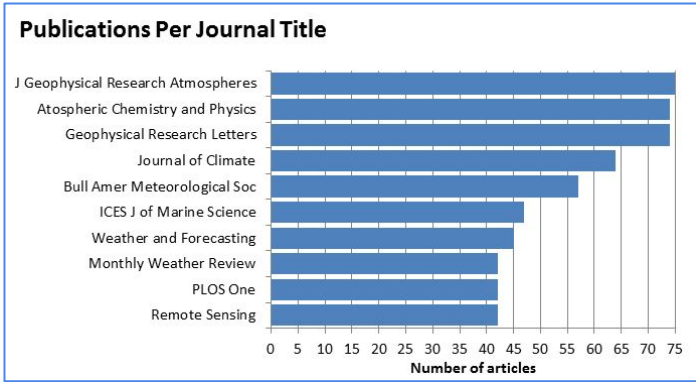
Bar Chart

Save Analysis Data to File

Data rows displayed in table

All data rows (up to 200,000)

(868 Organizations-Enhanced value(s) outside display options.)



NOAA-Wide Publications Tracking

DATA ANALYSIS & VISUALIZATION

Geographic maps are created by analyzing results in Web of Science by territory, saving that data as a .csv file which can then be loaded into the Sci2 tool which has the ability to analyze that data and create a geographic visualization.

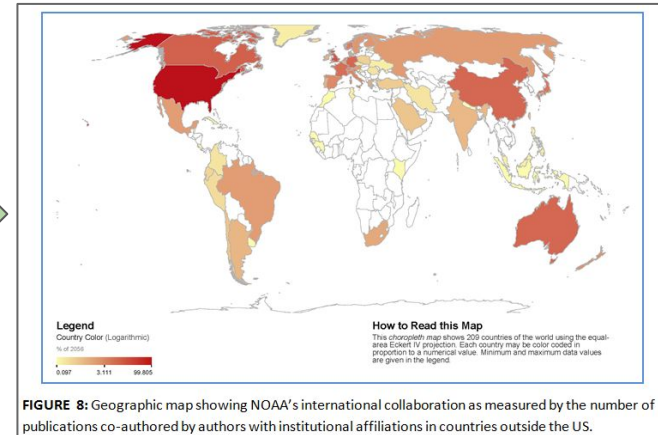
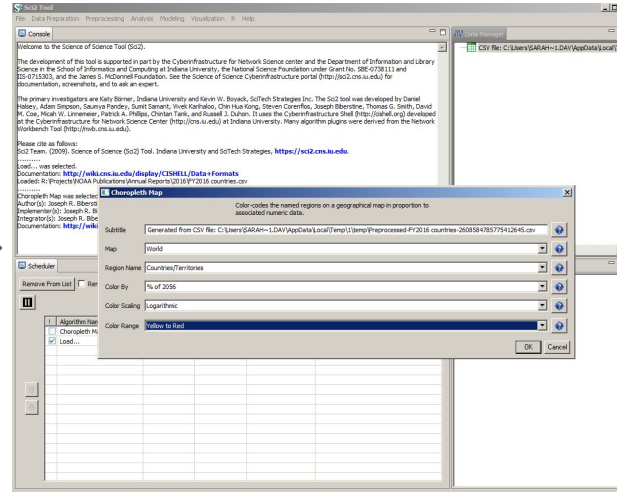
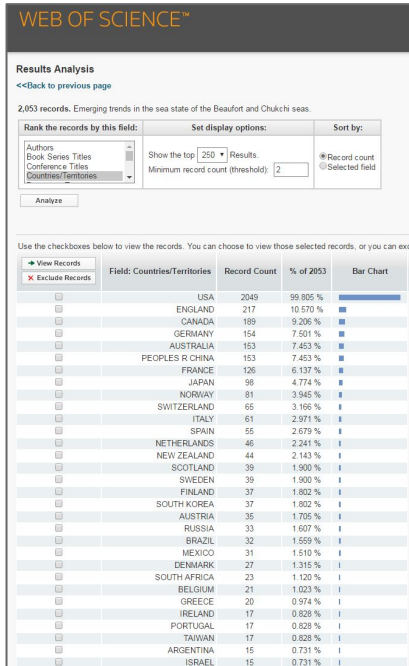
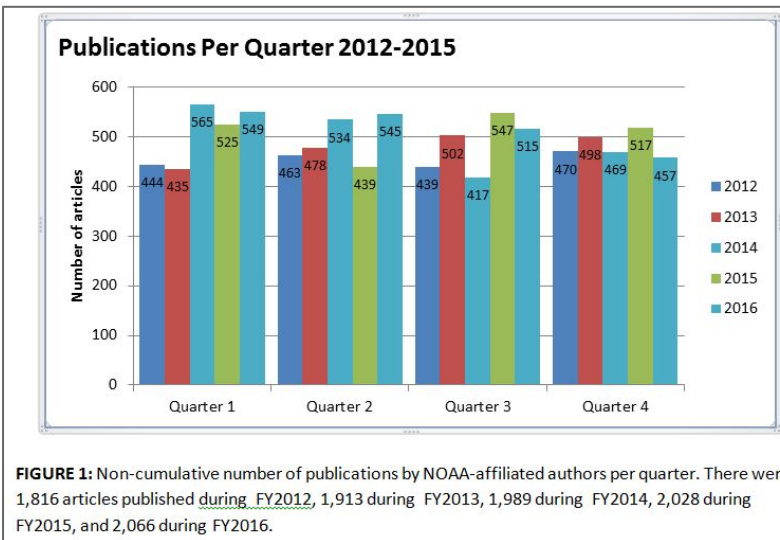
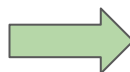
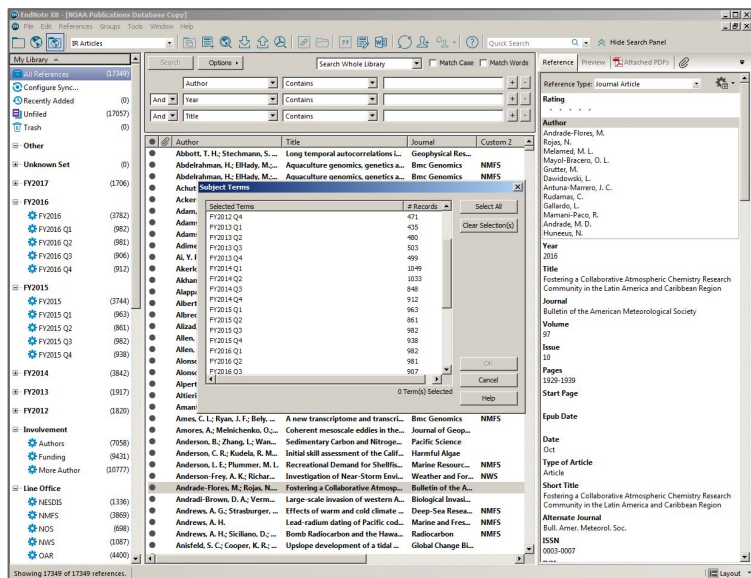


FIGURE 8: Geographic map showing NOAA's international collaboration as measured by the number of publications co-authored by authors with institutional affiliations in countries outside the US.

NOAA-Wide Publications Tracking

DATA ANALYSIS & VISUALIZATION

The metadata added during data collection and review such as fiscal year and line office can be analyzed using the tools in EndNote desktop and visualized using Excel.

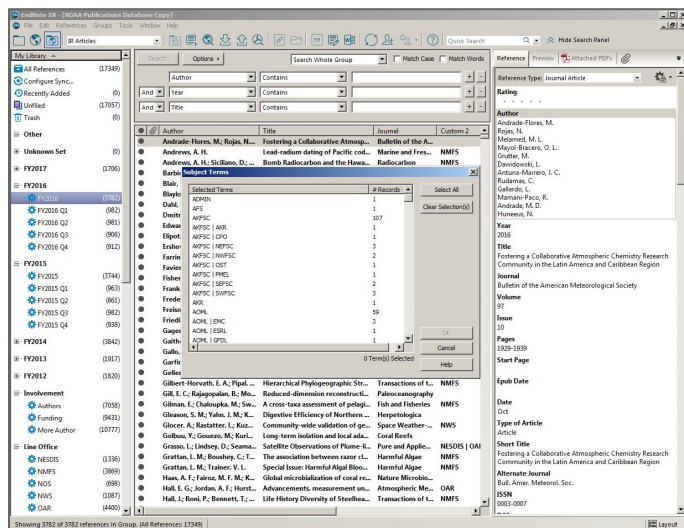




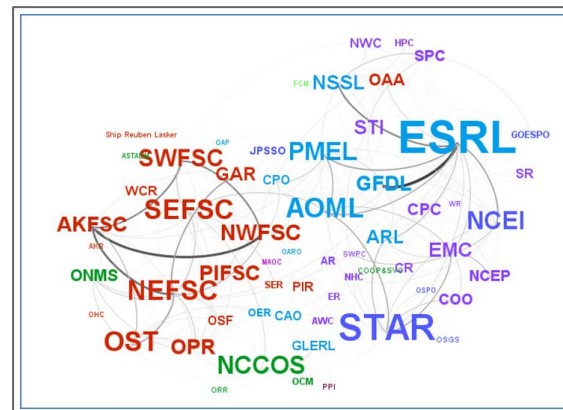
NOAA-Wide Publications Tracking

DATA ANALYSIS & VISUALIZATION

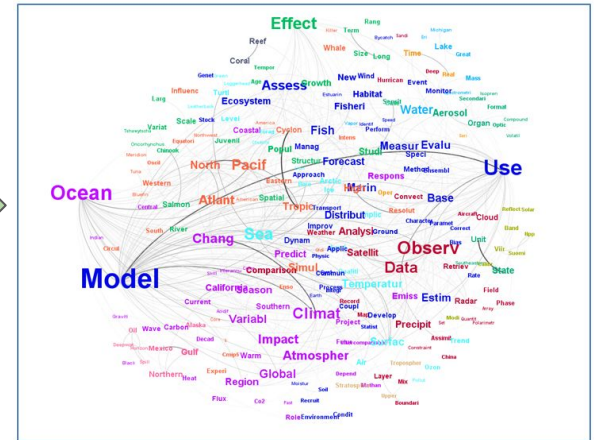
The line office and lab metadata added during data collection can also be used to create collaboration network maps. This is done by exporting that data into Excel, loading it into Sci2 for analysis and then visualizing that analysis in Gephi.



A	B	C	D	E	F	G	H
1	18702	2015	Genetic S/NMFS	SWFSC	WOS:000369918100131		
2	19355	2015	Character NMFS	PFSC	WOS:000369063000024		
3	19407	2015	Measures OAR	ESRL	WOS:000369578100026		
4	18740	2015	Resource NMFS	SEFSC	WOS:000364229000022		
5	20296	2015	THE AMAC OAR	ESRL	WOS:000369050100001		
6	18080	2015	Using cult. OAR	PPI GLERL	PPI WOS:000362229100015		
7	18670	2015	First Assn NMFS	SWFSC	WOS:000363181000029		
8	19335	2015	Seasonal OAR	PMEL	WOS:000365519700011		
9	19502	2015	Tropical OAR	GFDL	ESR WOS:000369918000037		
10	18745	2015	ENSO and OAR	ACOML	WOS:000363952100002		
11	20043	2015	Reconstruct OAR	GLERL	CI WOS:000369151300017		
12	20084	2015	Observing OAR	ACOML	WOS:000369050000016		
13	20085	2015	Advances OAR	NWACOML	EF WOS:000369050000017		
14	19660	2015	Organic ni OAR	ESRL	WOS:000367189600007		
15	19118	2015	Robust Ar NOS	NOS	WOS:000364242100139		
16	18645	2015	Guideline NMFS	OHC	WOS:000369371300003		
17	20218	2015	Weakener OAR	ESRL	WOS:000368316800003		
18	19511	2015	A Review NMFS	PFSC	SE WOS:000366762100001		
19	19521	2015	Calli rene OAR	PMEL	WOS:000369169000009		
20	18746	2015	Contribut NWS	CPC	WOS:000363952100003		
21	20095	2015	The Ocean NWS	OAEMC	GFE WOS:000368117600006		
22	18459	2015	PETER B. ENMFS	SWFSC	WOS:000363284900019		
23	18935	2015	Impacts o NESDIS	STAR	WOS:000364317000017		
24	19662	2015	Analysis o OAR	ESRL	WOS:000367189600028		
25	20199	2015	DROUGHT OAR	ESRL	WOS:000368953300015		
26	19391	2015	Atlantic N NWS	CPC	WOS:000369569700001		
27	19066	2015	Changes I OAR	PMEL	WOS:000369768300006		
28	19633	2015	Improving NWS	OAHP	NW WOS:000369699300001		
29	20088	2015	Combining NMFS	SWFSC	WOS:000368220000007		
30	18215	2015	Key Role NWS	CPC	WOS:000362661800013		
31	19639	2015	Where an OAR	PMEL	WOS:000365379500019		
32	19656	2015	Evaluation NESDIS	NCEI	ARI WOS:000367225700005		
33	20197	2015	THE HAW NWS	PI	WOS:000369050000001		
34	19944	2015	On the co NWS	CPC	WOS:000367623600007		
35	19396	2015	Evolution OAR	PMEL	WOS:000363626700003		
36	19218	2015	Perspect NWS	NCEP	WOS:000365518600018		
37	19814	2015	Atlantic o OAR	GFDL	WOS:000367949000002		
38	19386	2015	Climate O NWS	AR	WOS:000367689100001		
39	18438	2015	Scenario OAR	CPO	WOS:000363483800005		
40	19029	2015	Spillover NMFS	NWFFC	WOS:000367564600006		
41	18668	2015	Model for NWS	NCEP	WOS:000363695000023		
42	19940	2015	Suomi NP NESDIS	STAR	WOS:000367374000017		
43	19114	2015	Ground-B OAR	NSSL	WOS:000365485000001		
44	14644	2015	Evolution NMFS	ESRL	WOS:000367700000017		
45	19239	2015	collaboration				



Web of Science search results can be saved as an .isi file which can then be loaded into the Sci2 tool for network analysis. Once analyzed in Sci2, networks are visualized in Gephi and saved as .png files. Visualizations are also saved as .pdf files for potential use in other formats. WoS search results can also be saved as .csv files for



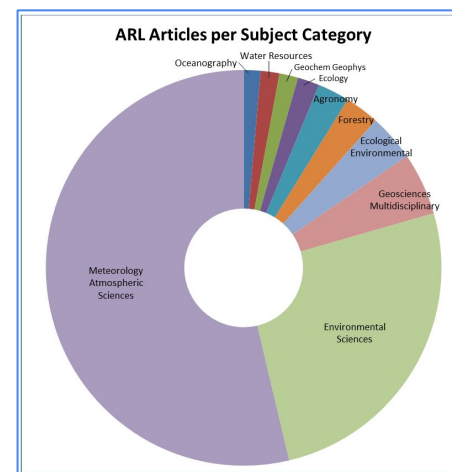
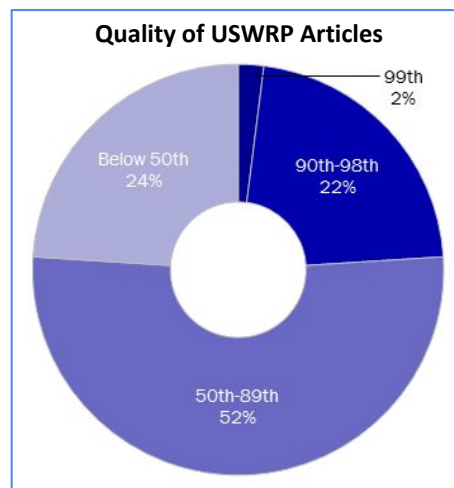
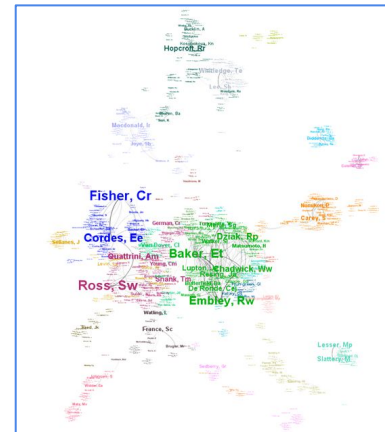
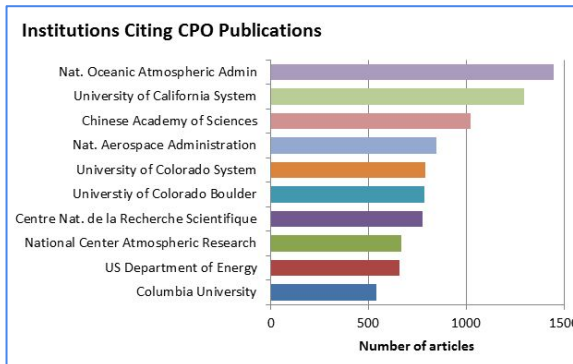
NOAA Central Library
National Oceanic and Atmospheric Administration

Other Projects



Both ongoing and one-time projects

- Most projects are requested by a program or grant office.
- Typically, data is parsed from our existing database *or* client provides a list of publications.
- We prefer datasets of over 100 articles; larger datasets allow for more meaningful analysis.
- A generic checklist provides a starting point for new projects and each project is documented and all incidental materials and data are saved in a common location.



Other Projects



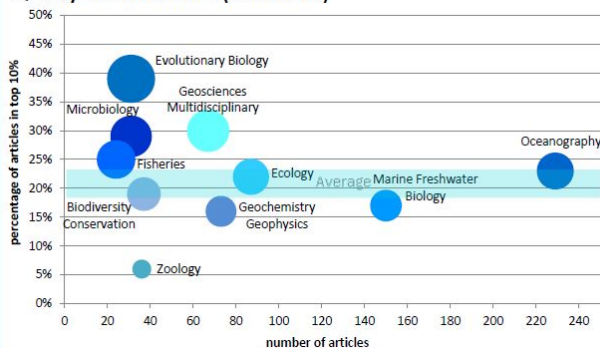
Office of Ocean Exploration and Research (OER) Citation Report

- Produced quarterly and analyzing peer-reviewed articles 2002-present
- Dataset derived from a Web of Science search as well as a list of publications provided by OER

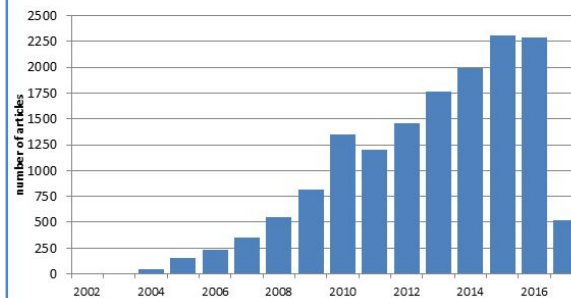
SUMMARY METRICS

Bibliometric Indicator	Value
Number of Publications (p)	730
Total Number of Citations Received (c)	15039
Average Number of Citations per Paper (c/p)	20.6
H- Index	57
Percentage of Publications in the Top 10% for Citation Counts	≈21.5%

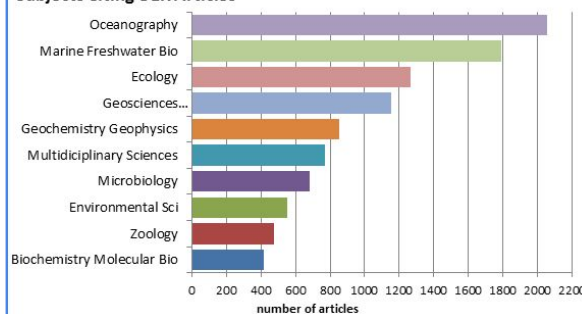
Quality of OER Articles (2002-2015)



Citations Received Per Year



Subjects Citing OER Articles





Promoting Our Program

Webpage

Single page with pop-ups that:

- Explain bibliometrics;
- Showcase our products and services;
- Connect users to tools available to do their own analyses.

One-Sheet

Simplified content that reflects what we feature on the web page.

Brown Bag & Conference Presentations

Facebook & NOAA-wide emails

The image displays a screenshot of the NOAA Central Library website's Bibliometrics section, alongside a simplified one-sheet version of the same content.

Webpage Content:

- Header:** NOAA Central Library, National Oceanic and Atmospheric Administration.
- Navigation:** WEBSIMPLE, ABOUT, RESEARCH TOOLS, SERVICES, COLLECTIONS, A-Z, CONTACT.
- Services / Bibliometrics:** Services / Bibliometrics
- Services:** Ask-A-Librarian, ILL, Bibliometrics, Author Services, Instruction, Technical Services.
- BIBLIOMETRICS:** Bibliometrics and citation analysis is a way we are able to illustrate NOAA's research output. For information on other services, click on the links below.
 - Bibliometrics 101
 - Types of Metrics
 - Bibliometrics at NOAA
 - Bibliometrics and You
- Visuals:** A bar chart titled "Citations Per Year" showing an upward trend from 2000 to 2010. A word cloud titled "Research Areas" featuring terms like ESRL, GFDL, and NCAR.

One-Sheet Content:

- Header:** NOAA Central Library, National Oceanic and Atmospheric Administration.
- BIBLIOMETRICS**
- BIBLIOMETRICS 101**
- What are bibliometrics?** Bibliometrics are the quantitative analysis of academic publications. Using academic publications as a data source, bibliometric analysis attempts to provide a better understanding of how research is produced, organized, and interrelated. It also attempts to evaluate academic publications and sets of publications based on the number of citations these publications have received. Bibliometrics and citation analysis are one way we are able to illustrate NOAA's status as producer of world-class research.
- Why are bibliometrics important?**
 - Bibliometrics can help illustrate the impact of a scholarly publication or group of publications in the greater research community and can support application for grants and research funding.
 - When used with other methods such as peer review, bibliometrics is a useful tool in evaluating the research output of programs and researchers.
 - Bibliometrics can be used to identify research strengths and gaps in research and inform decisions about future research.
- Limitations of bibliometrics**
 - Bibliometric indicators are imperfect and can only be used for their specific purpose.
 - Citation counts and behaviours vary among fields and over time and comparisons between subject areas should be avoided.
 - Data sets tend to be skewed and many metrics are easy to manipulate.
 - Bad data makes for bad bibliometrics.
- COMMON METRICS**
- Journal Metrics**
 - Metrics like Impact Factor and Eigenfactor which measure the relative importance of a journal to the scientific community help evaluate individual journal titles are helpful when looking to submit an article for publication
- Publication Metrics**
 - Used to analyze the research output of an individual or group
 - Publication counts such as articles published per year or quarter
 - Number of articles published in a particular journal title or subject area
 - Rates of collaboration with other researchers both within the organization and with other institutions
- Visuals:** A donut chart titled "Publications per line office as a percentage of all NOAA in FY2016" showing the distribution of publications across different line offices.

Open Source Tools We Use

Science of Science (Sci2) Tool a toolset designed for the study of science that supports the temporal, geospatial, topical, and network analysis and visualization of scholarly datasets.

Download the tool at: <https://sci2.cns.iu.edu/user/index.php> (you will need to register for an account)

The [Sci2 Manual](#) provides details about the tool, helpful tutorials and sample data sets for learning purposes.

The book [Visual Insights: A Practical Guide to Making Sense of Data](#) by Katy Börner and Ted Polley (2014, Cambridge, MA: The MIT Press.) offers an introduction to visualization design through both theory and practical application.

Gephi an open-source network analysis and visualization tool.

Download the tool at: <https://gephi.org/>

The [Gephi User Guide](#) offers an introduction to networks and network analysis, tutorials and sample data sets.

A Gephi [Facebook group](#) provides a link to experienced users and discussions as well as examples of successful visualizations created using the tool.

Resources



Other Open Source Tools Available

VOSViewer <http://www.vosviewer.com/>

Pajek Wiki <http://pajek.imfm.si>

CiteSpace <http://cluster.cis.drexel.edu/~cchen/citespace>

VOSviewer www.vosviewer.com

NodeXL <http://nodexl.codeplex.com>

NetDraw <http://sites.google.com/site/netdrawsoftware>

Cytoscape www.cytoscape.org

Google Charts <https://developers.google.com/chart/>

OpenRefine <http://openrefine.org/>



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National Oceanic and Atmospheric Administration